(driving stage) mode **12**, and a R-stage (reverse stage) mode **13**, and a special driving mode including a diagonal driving mode **14**, a parallel movement mode **15**, and an in-situ rotation mode **16** are disposed along the movement path of the gear shift lever.

[0048] In addition, in the case of the gear shift button type mechanism of FIG. **6**, each of the general driving mode and the special driving mode may be disposed in the form of a button.

[0049] In addition, referring to FIG. **2**, since a steering angle sensor **21** is connected to the steering wheel **20**, a steering angle is detected through the steering angle sensor **21** and transmitted to the controller **50**. For reference, a steering reaction force mechanism which generates a steering reaction force of the steering wheel **20** may be optionally added.

[0050] The accelerator pedal **30** is capable of operating a throttle valve, a step-in signal of the accelerator pedal **30** is detected through an accelerator position sensor (APS) **31**, and the detected step-in signal is transmitted to the controller **50**.

[0051] The brake pedal **40** is connected to a brake mechanism and is capable of operating the brake mechanism. A step-in signal of the brake pedal **40** is also detected through a brake pedal stroke sensor (BPS) **41**, and the detected step-in signal is transmitted to the controller **50**.

[0052] The existing corner modules may be employed as the corner modules **60***a*, **60***b*, **60***c*, and **60***d*. However, in order to maximize usability of four-wheel independent steering operations such as parallel parking and an in-situ rotation, it is appropriate to employ large steering angle corner modules **60***a*, **60***b*, **60***c*, and **60***d*, each of which is steered up to 90 degrees.

[0053] Each of the large steering angle corner modules **60***a*, **60***b*, **60***c*, and **60***d* includes a suspension system capable of sufficiently striding a gap with a wheel, a high bending angle drive shaft or an in-wheel system, and a steering actuator for providing an operating force to independently steer the large steering angle corner modules **60***a*, **60***b*, **60***c*, and **60***d*.

[0054] In particular, the controller **50** according to embodiments of the present disclosure rotates a wheel according to the in-situ rotation mode **16** when the in-situ rotation mode **16** of a vehicle is executed, calculates a target rotation angle of the vehicle on the basis of a steering angle of the steering wheel **20** when the steering wheel **20** is steered, and controls the vehicle to be rotated in-situ by as much as the target rotation angle when a step-in signal of the accelerator pedal **30** is applied.

[0055] For reference, the controller **50** according to an exemplary embodiment of the present disclosure may be an ECU.

[0056] In addition, the controller **50** may be implemented through an algorithm configured to control operations of various components of the vehicle, a non-volatile memory (not shown) configured to store data relating to software commands to reproduce the algorithm, or a processor (not shown) configured to perform operations, which will be described below, using data stored in a corresponding memory. Here, the memory and the processor may be implemented as separate chips. Alternatively, the memory and the processor may be implemented as a single chip in which the memory and the processor are integrated. The processor may be in the form of one or more processors.

[0057] Meanwhile, in embodiments of the present disclosure, a control method of an in-situ rotation mode of a four-wheel independent steering type vehicle using the controller **50** may broadly include a wheel rotation operation, a target rotation angle calculation operation, and a rotation control operation.

[0058] First, in the wheel rotation operation, when the in-situ rotation mode of the vehicle is executed, the controller **50** steers and rotates wheels according to the in-situ rotation mode.

[0059] For example, when a driver selects the in-situ rotation mode through the driving mode switching mechanism **10**, the in-situ rotation mode is executed, and when the in-situ rotation mode is executed, the controller **50** steers and rotates front and rear wheels using the corner modules **60***a*, **60***b*, **60***c*, and **60***d* to suit to an in-situ rotation.

[0060] In this case, as shown in FIG. **1**E, it is preferable to steer and rotate a left front wheel and a right rear wheel at an angle of 45° to a right side and to steer and rotate a right front wheel and a left rear wheel at an angle of 45° to a left side. However, the front and rear wheels may be steered and rotated in the form of FIG. **1**F, and the rotated angles of the front and rear wheels may be steered in various forms allowing the in-situ rotation.

[0061] In the target rotation angle calculation operation, when the steering wheel **20** is steered, the controller **50** calculates the target rotation angle of the vehicle on the basis of a steering angle of the steering wheel **20**.

[0062] That is, in a state in which the in-situ rotation mode is executed, when the driver steers the steering wheel **20** in a direction of a desired in-situ rotation, a target angle at which the vehicle is rotated in-situ is calculated on the basis of the steering angle which is detected through the steering angle sensor **21**.

[0063] In the rotation control operation, when the step-in signal of the accelerator pedal **30** is applied, the controller **50** may control the vehicle to be rotated in-situ by as much as the target rotation angle.

[0064] That is, when the driver steps on the accelerator pedal **30** after the target rotation angle is set, a driving force is applied to a driving wheel to perform the in-situ rotation of the vehicle.

[0065] As described above, according to embodiments of the present disclosure, the target rotation angle is set by as much as a steering amount by which the driver operates the steering wheel **20**, and the vehicle is rotated in-situ by as much as the set target rotation angle so that the driver easily and conveniently operates an in-situ rotation function of the vehicle to reduce driving anxiety and an accident risk.

[0066] Meanwhile, the target rotation angle calculation operation of embodiments of the present disclosure may be divided for each step according to the steering angle range of the steering wheel **20**, and the target rotation angle may be set for each step.

[0067] That is, as an exemplary embodiment for calculating the target rotation angle, a rotation angle of the vehicle may be gradually recognized according to the steering amount by which the driver rotates the steering wheel **20** to set the target rotation angle.

[0068] For example, FIG. **3** is a diagram for describing an operation in which the in-situ rotation of the vehicle is divided and set in units of 30° and the vehicle is rotated according to an embodiment of the present disclosure that